

NEW RECORDS OF ENTOCYTHERID OSTRACODS
INFESTING BURROWING CRAYFISHES, WITH
THE DESCRIPTION OF A NEW SPECIES,
ASCETOCYTHERE STOCKERI

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Abstract.—New records of the occurrence of entocytherids on burrowing crayfishes are reported from Kentucky, North Carolina, Virginia, and West Virginia. These include members of the genera *Ascetocythere* (3), *Dactylocythere* (3), *Donnaldsoncythere* (1), *Entocythere* (2), and *Uncinocythere* (2). *Ascetocythere stockeri*, a close relative of *A. cosmata*, is described from four localities in the Ohio Basin in Mason and Cabell counties, West Virginia, and a single locality in Carter County, Kentucky.

In their study of burrowing crayfishes, Raymond F. Jezerinac and G. Whitney Stocker, of Ohio State University, Newark, saved the detritus from containers in which the crayfishes were preserved and have kindly permitted us to study the ostracods that were entrapped in it. Of the 20 samples received, 15 from the Ohio, Potomac, and Tennessee watersheds contained entocytherids among which were representatives of 11 species belonging to 5 genera. These were infesting six species of crayfishes (the identities of which were furnished to us by Messrs. Jezerinac and Stocker), five of which are largely restricted to burrows. The associations of the ostracods and their crayfish hosts in the 15 localities are recorded below.

For each species of ostracod, the original description and the first use of the currently accepted orthography are cited. These are followed by a list of the new localities, crayfish hosts, and remarks on the ecological and geographic distribution of the species.

Except as noted otherwise, the ostracods are deposited in the National Museum of Natural History, Smithsonian Institution.

Ascetocythere cosmata Hobbs & Hart

Ascetocythere cosmata Hobbs & Hart, 1966: 46, figs. 24, 25. [Type locality: 4 mi N of

jct of St. Rte. 89 and Blue Ridge Parkway, Grayson Co., Virginia. Host: *Cambarus dubius* Faxon.]

New record.—North Carolina: Ashe County [New Basin], burrows near unnamed trib of North Fork of New River on county road, 0.1 mi E of Crumpler, 8.8 mi NE of West Jefferson, 11 Aug 1984, G. W. Stocker, R. F. Jezerinac, and R. F. Thoma, host: *Cambarus (Jugicambarus) dubius* Faxon, associates: *Dactylocythere daphnioides* (Hobbs, 1955), *Entocythere harrisi* Peters, 1975, and *Uncinocythere simondsi* (Hobbs and Walton, 1960).

Habitat.—Crayfish burrows.

Distribution.—The Catawba and New basins in Alleghany, Ashe, and Avery counties, North Carolina, and Grayson County, Virginia.

Ascetocythere hyperoche Hobbs & Hart

Ascetocythere hyperoche Hobbs & Hart, 1966:41, figs. 12, 13. [Type locality: trib. of Cherokee Reservoir, 0.5 mi W of jct of U.S. Hwys. 11E and 25E, Grainger Co., Tennessee. Host: *Orconectes spinosus* (Bundy), *Cambarus (Hiaticambarus) longirostris* Faxon, and *Cambarus (C.) bartonii cavatus* Hay.]

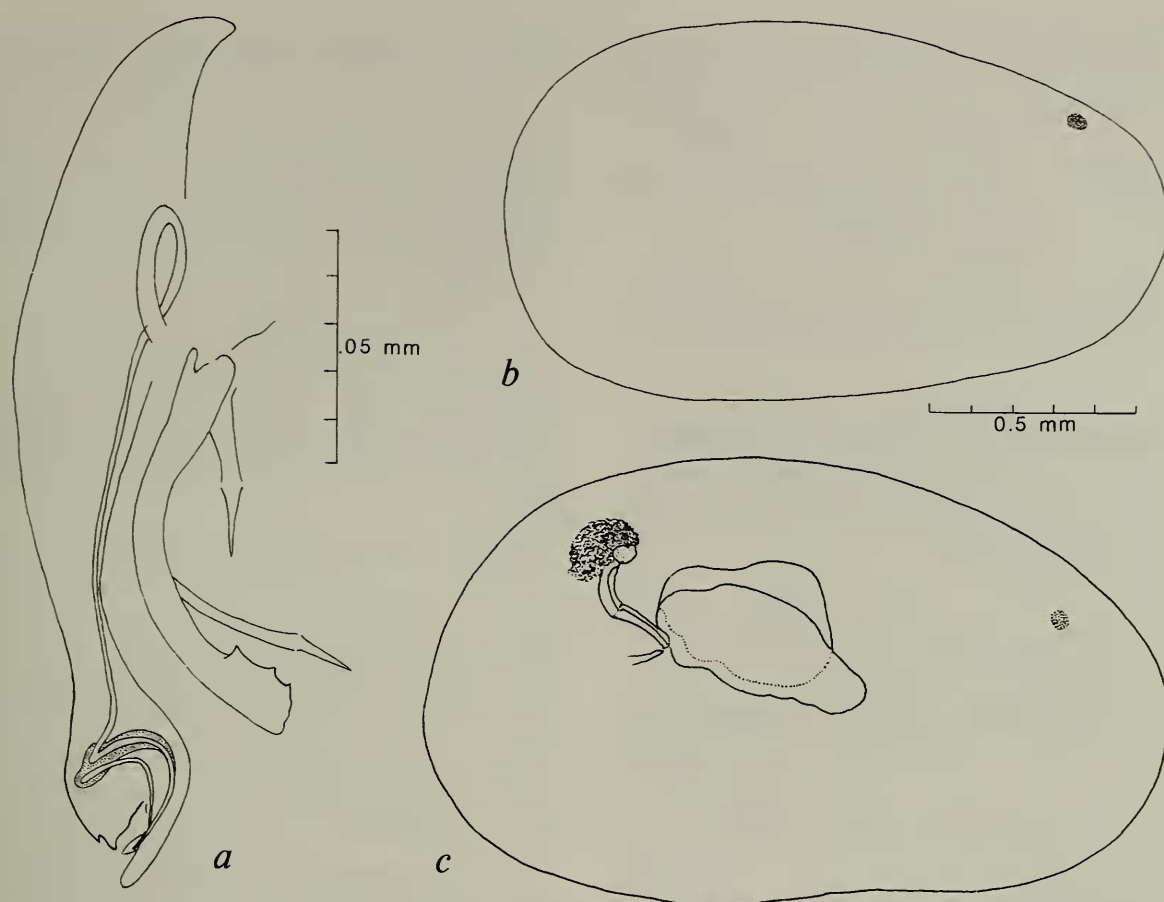


Fig. 1. *Ascetocythere stockeri*, new sp.: a, Copulatory complex of holotypic male; b, Right valve of shell of holotype; c, Same of paratype female (two irregular, overlapping masses in interior ova).

New records.—Virginia: Russell County [Holston Basin], floodplain of tributary to Big Moccasin Creek on County Rd 657, 0.9 air mi W of Hansonville, 15.9 air mi N of Bristol, 9 Aug 1986, G.W.S. and R.F.J., host: *Cambarus* (*Jugicambarus*) *dubius* Faxon, associate, *Donnaldsoncythere donnaldsonensis* (Klie 1931).

Habitat.—Probably largely confined to crayfish burrows.

Distribution.—This ostracod was previously known only from the type locality in the Holston River basin in Grainger County, Tennessee, where Hobbs and Hart reported the hosts to be three stream-dwelling crayfishes.

Ascetocythere stockeri, new species
Fig. 1

Diagnosis.—Eye pigmented and located about one-sixth shell length from anterior margin. Shell (Fig. 1b) ovate with greatest

height about one-third shell length from posterior end where about 1.5 times height at level of eye; margin entire, lacking emarginations and prominences. Submarginal setae present except dorsally.

Copulatory complex (Fig. 1a) with peniferum expanded ventrally in bubiform enlargement following conspicuously slender constricted section about one-fourth of length of peniferum from distal extremity; anterior process lacking; ventral process digitiform extending ventrally much beyond other processes; posterior process represented by two acute teeth. Penis very prominent, spermatic and prostatic elements not contiguous throughout their lengths, both C-shaped and emerging ventrally at base of ventral process between it and small cephaloventrally directed lobe. Clasping apparatus broadly arched, obliterating junction of vertical and horizontal rami; postaxial border entire; preaxial bor-

Table 1—Measurements (in mm) of *Ascetocythere stockeri*, n. sp.

	Holotype	Males (14)	Females (5)
Length (range)	0.39	0.35–0.43	0.39–0.42
Average		0.38	0.41
Height (range)	0.23	0.21–0.25	0.22–0.25
Average		0.23	0.24

der with three teeth grouped on thickened distal fifth. Dorsal finger moderately heavy and about one-half as long as curved, more slender ventral finger.

Triunguis female.—Eye located about one-sixth shell length from anterior end. Shell (Fig. 1c) subovate, weakly concave in anterior three-fifths. Greatest height distinctly posterior to midlength where about 1.4 times that at level of eye. Submarginal setae present except dorsally. Genital apparatus supported by pair of ribs extending dorsomesially from complex of supports at base of third leg. Apices of ribs in contact with small, subspherical, homogeneous, hyaline body embraced dorsally and posteriorly by larger, heterogeneous mass. For measurements, see Table 1.

Type locality: Chief Cornstalk Hunting Grounds Campground, 2.1 miles southwest of Beech Hill, 10.1 miles southeast of Gallipolis, Mason County, West Virginia [Kanawha Basin], where it was found in a collection of crayfishes containing representatives of three species: *Cambarus (Jugicambarus) dubius* Faxon, *Cambarus (Lacunicambarus) diogenes* Girard, and *Cambarus (C.) bartonii cavatus* Hay. These specimens were collected on 20 Apr 1986 by G. Whitney Stocker, Dave Chrisman, and R. F. Jezerinac.

Disposition of types: The holotypic male is deposited in the National Museum of Natural History (Smithsonian Institution), USNM 240114. Paratypes are in the collections of H. H. Hobbs III and the Smithsonian Institution.

Hosts: *Cambarus (C.) bartonii cavatus*

Hay, *C. (Jugicambarus) dubius* Faxon, and *C. (Lacunicambarus) diogenes* Girard. *C. (J.) dubius* was present in all of the collections containing specimens of *Ascetocythere stockeri*, and we think it unlikely that this ostracod occurs on the first and last named crayfishes.

Entocytherid associates: *Dactylocythere macroholca* Hobbs & Hobbs, 1970; *Donnaldsoncythere donnaldsonensis* (Klie, 1931); *Entocythere elliptica* Hoff, 1944; and *Uncinocythere zanca* Hobbs & Walton, 1963.

Range and specimens examined: Nineteen specimens from the following localities. Kentucky: *Carter County* [Little Sandy Basin], (1) roadside ditch along Dry Fork 1.5 air mi S of Willard, 1 Sep 1986, Dave Hile, G.W.S., and R.F.J., host: *C. (J.) dubius*, associates: *Dactylocythere macroholca* Hobbs & Hobbs, *Entocythere elliptica* Hoff, and *Uncinocythere zanca* Hobbs & Walton. West Virginia: *Mason County* [Kanawha Basin], (2) Type locality; (3) 3 mi S of type locality and 2.7 mi SE of Arlee, 2 May 1987, G. Lombardo, R. French, and G.W.S., host: *C. (J.) dubius*, no ostracod associates. *Cabell County* [Ohio Basin], (4) Spurlock Creek on Union Ridge Rd, 1 mi S of St. Rte. 2, 1.8 mi N of Union Ridge, 3 May 1987, R.F., D. Chrisman, G.L., R.F.J., and G.W.S., host: *Cambarus (J.) dubius*, associate, *Dn. donnaldsonensis*; (5) along Brian Creek Rd, S of Union Ridge Rd, 4.4 mi S of Glenwood, 3 May 1987, G.L., R.F., D.C., R.F.J., and G.W.S., host: *C. (J.) dubius*, associate: *Dn. donnaldsonensis*.

Relationships: *Ascetocythere stockeri* is a member of the Coryphodes Group (Hobbs & Hart 1966:44), characterized by the teeth on the preaxial margin of the clasping apparatus being grouped distally. Its closest relative is probably *A. cosmeta* Hobbs & Hart, 1966, from which it differs most conspicuously in lacking an anterior process on the peniferum. It differs from the other members of the group, *A. coryphodes* Hobbs & Hart, 1966, and *A. myxoides* Hobbs &

Hart, 1966, in lacking a snoutlike prominence on the anterior surface of the bulbous part of the peniferum.

Etymology: This ostracod is named in honor of G. Whitney Stocker, who collected or participated in collecting most of the materials on which this report is based.

Dactylocythere crawfordi Hart

Dactylocythere crawfordi Hart, 1965:255, figs. 1, 2. [Type locality: Macacheek Creek on St. Rte. 287, Logan Co., Ohio. Host: *Cambarus* (*Lacunicambarus*) *diogenes* Girard.]

New record.—West Virginia: Mason County [Ohio Basin], wet field along St. Rte. 2, 2.0 mi S of U.S. Hwy. 35, 1.5 air mi E of Gallipolis, 19 Apr 1986, D.C., R.F.J., G.W.S., host: *Fallicambarus* (*Creaserinus*) *fodiens* (Cottle).

Habitat.—Crayfish burrows.

Distribution.—Ohio River Basin: White and Wabash drainages in Indiana, Little Miami, Scioto, and Symmes Creek in Ohio, and in Mason County, West Virginia.

Dactylocythere daphnioides (Hobbs)

Entocythere daphnioides Hobbs 1955:325, figs. 1, 2, 5, 6–9.

Dactylocythere daphnioides.—Hart, 1962: 130.

New record.—North Carolina: Ashe County [New Basin], burrows near trib to North Fork of New River, 0.1 mi E of Crumpler; 8.8 mi NE of West Jefferson, 11 Aug 1984, R.F.J., G.W.D., R.F.T., host: *C. (J.) dubius*, associates: *As. cosmeta*, *E. harisi*, and *U. simondsi*.

Habitat.—Except for the record cited above, all known specimens have been found on crayfishes living in lotic habitats.

Distribution.—“From headwaters of the Little Tennessee and Pee Dee drainage systems in North Carolina northward to the New and Big Sandy systems in Virginia and West Virginia. The Kentucky and Missouri

localities cited by Hart and Hart (1974:56) should be confirmed” (Hobbs & Peters, 1977:28).

Dactylocythere macroholca
Hobbs & Hobbs

Dactylocythere macroholca Hobbs & Hobbs 1970:6, fig. 3a–d.

New record.—Kentucky: Carter County [Little Sandy Basin], roadside ditch 1.5 air mi S of Willard, near Lawrence Co line, 1 Sep 1986, D.H., R.F.J., G.W.S., host: *C. (J.) dubius*, associates, *As. stockeri*, *E. elliptica*, and *U. zancla*.

Habitat.—Burrows and streams.

Distribution.—Ohio River Basin in Kentucky: Barren, Licking, and Little Sandy watersheds.

Donnaldsoncythere donnaldsonensis (Klie)

Entocythere donnaldsonensis Klie, 1931: 334–341, figs. 1–9. [Type locality: Donald’s Cave, Lawrence County, Indiana. Host/s: uncertain; however, probably *Orconectes inermis inermis* Cope and/or *Cambarus* (*Erebicambarus*) *tenebrosus* Hay.

Donnaldsoncythere donnaldsonensis.—Hart, 1962:131.

New record.—Kentucky: Lawrence County [Big Sandy Basin], (1) roadside ditch 1.3 air mi NW of Webbyville, 1.4 air mi S of Willard, 1 Sep 1986, D.H., G.W.S., and R.F.J., host: *C. (J.) dubius*, associates: none. Lewis County [Licking Basin], (2) seep on St. Rte. 24, 3.8 mi E of county line, 2 air mi E of Foxport, 9 Jun 1984, G.W.S., Diane M. Williams, R.F.J., host: *C. (J.) dubius*, no associates. Virginia: Russell County [Holston Basin], (3) floodplain along trib of Big Moccasin Creek on Co Rd 657, 0.9 air mi W of Hansonville, 15.8 air mi N of Bristol, 9 Aug 1986, G.W.S. and R.F.J., host: *C. (J.) dubius*, associate: *As. hyperoche*. West Virginia: Barbour County [Tygart Basin], (4) roadside ditch 0.8 mi E of U.S. Hwy. 119

on Arden Rd, 1.3 air mi NE of Hopewell, R.F.J. and G.W.S., hosts: *C. (J.) dubius*, *C. (J.) diogenes*, no associates. Cabell County [Ohio Basin], (5) burrows along Brian Creek Rd, S of Union Ridge Rd, 4.4 mi S of Glenwood, 3 May 1987, Greg Lombardo, Randy French, Dave Chrisman, R.F.J., and G.W.S., host: *C. (J.) dubius*, associate: *As. stockeri*; (6) burrows on Union Ridge Rd, 1 mi S of St. Rte. 2, 1.75 mi N of Union Ridge, G.L., R.F., D.C., R.F.J., and G.W.S., host: *C. (J.) dubius*, associate: *As. stockeri*. Grant County [Potomac Basin], (7) roadside ditch on Forest Rd 75, 10.2 air mi NW of Petersburg, 28 Jun 1986, D.C. and G.W.S., host: *C. (J.) monongalensis*, no associates. Mason County [Kanawha Basin], (8) see type locality of *As. stockeri*, (9) burrows along dirt road 3 mi S of Chief Cornstalk Hunting Ground Campground, 2.7 mi SE of Arlee, 2 May 1987, G.L., R.F., and G.W.S. (8) See Locality "2" for *As. stockeri*. Pocahontas County [Greenbrier Basin], (10) seep in Falls of Hills Creek Scenic Area off St. Rte. 39, 1.6 mi E of Greenbrier Co line, 11.1 air mi ESE of Richwood, 7 Jul 1985, V.L. Stocker and G.W.S., host: *C. (J.) monongalensis*, no associates.

Habitat.—All of the records cited above are based on specimens collected from burrowing crayfishes. This ostracod, however, inhabits a wide range of epigeal and hypogeal habitats.

Distribution.—"From northern Georgia to Indiana and Maine" (Hobbs & Peters 1977:44). All of the localities cited since this summary statement appeared (Hobbs & Peters, 1982:312; and Hobbs & McClure 1983: 772–778) lie within these limits.

Entocythere elliptica Hoff

Entocythere elliptica Hoff, 1944:328, figs. 15–21. [Type locality: north of Fargo, Clinch County, Georgia. Host: *Procambarus (Ortmannicus) seminolae* Hobbs.]

New record.—Kentucky: Carter County

[Little Sandy Basin], roadside ditch 1.5 air mi S of Willard near Lawrence County line, 1 Sep 1986, D.H., G.W.S., R.F.J., host: *C. (J.) dubius*, associates: *As. stockeri*, *Dt. macroholca*, and *U. zanca*.

Habitat.—Burrows and lentic and lotic habitats.

Distribution.—"Hart & Hart (1974:[87–88], 90) recorded the presence of *E. elliptica* and/or *E. internotalus* from Texas to North Carolina and from Kentucky to Florida, and Peters (1975:34) reported it from a number of localities in the James River watershed in Virginia" (Andolshek & Hobbs, 1986: 31). The locality cited above extends the range diagonally across the entire state of Kentucky.

Entocythere harrisi Peters

Entocythere harrisi Peters, 1975:32, figs. 5–7.

New record.—North Carolina: Ashe County [New Basin], burrows near trib of North Fork of New River, 0.1 mi E of Crumpler; 8.8 mi NE of West Jefferson, 11 Aug 1984, R.F.J., G.W.S., R.F.T., host: *C. (J.) dubius*, associates: *As. cosmeta*, *Dt. daphnioides*, and *U. simonds*.

Habitat.—Burrows and lotic habitats.

Distribution.—On the Atlantic versant from the York River Basin in Virginia southward through the Catawba Basin in North Carolina, and the New River Basin in Ashe County, North Carolina.

Uncinocythere simonds (Hobbs & Walton)

Entocythere simonds Hobbs & Walton, 1960:17, figs. 1–10.

Uncinocythere simonds.—Hart, 1962:138.

New record.—North Carolina: Ashe County [New Basin], burrows near trib of North Fork of New River, 0.1 mi E of Crumpler; 8.8 mi NE of West Jefferson, 11 Aug 1984, R.F.J., G.W.S., R.F.T., host: *C.*

(*J.*) *dubius*, associates: *As. cosmata*, *Dt. daphnioides*, and *E. harrisi*.

Habitat.—Burrows and a broad range of epigeal lotic and lentic habitats.

Distribution.—From Illinois, Kentucky, and North Carolina southward to Mississippi and northern Florida (Hart & Hart 1974; Hobbs & Peters 1977, 1982; Andolshek & Hobbs 1986).

Uncinocythere zancla Hobbs & Walton

Uncinocythere zancla Hobbs & Walton 1963:456, figs. 1–3.

New record.—Kentucky: Adair County [Green Basin], burrows along St. Rte. 205, 0.8 mi NE of Neatsville, 10 mi N of Russell Springs, 15 Mar 1987, G.W.S. and R.F.J., host: *Cambarus (Jugicambarus)* sp.?.; no associates; Carter County [Little Sandy Basin], roadside ditch 1.5 air mi S of Willard near Lawrence County line, 1 Sep 1986, D.H., G.W.S., R.F.J., host: *C. (J.) dubius*, associates: *As. stockeri*, *Dt. macroholca*, and *E. elliptica*.

Habitat.—This ostracod has been found most frequently infesting stream-dwelling crayfishes, but has also been found associated with a troglobitic species in Hart County, Kentucky, and with the burrower cited above.

Distribution.—Known only from the Kentucky, Green, and Little Sandy watersheds in Kentucky, and the Cumberland and Tennessee basins in Tennessee.

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